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Study of STD clinic attenders in England and Wales, 1978

2 Patterns of diagnosis

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SUMMARY A study of diagnostic patterns in patients attending sexually transmitted disease clinics in England and Wales during 1978 showed that homosexuals contributed 10% of all male cases but 15% of gonococcal infections. In heterosexual and homosexual men only 6% of disease episodes included more than one positive diagnosis compared with 16% in women. One or more diseases occurred concurrently in over 30% of cases of gonorrhoea, trichomoniasis, candidosis, genital herpes, and genital warts in women. Men with multiple episodes of disease contributed a disproportionate number of gonococcal infections but were less likely to have candidosis or genital herpes than patients with only one disease episode.

Thus, counting cases treated appears to be an inadequate way of measuring the problems caused by STDs. To enable more rapid identification of the diseases which are the most difficult to control, STD statistics should include the sexual orientation of male patients and differentiate between genuine "new" attenders at clinics and those previously seen.

Introducton

The long-established notification system for sexually transmitted diseases (STDs) treated in clinics within the United Kingdom provides published statistics which are among the most accurate and comprehensive in the world. These can still be faulted on several grounds, most of which have already been described.[1] Two further problems arise in the interpretation of the statistics, whose causes are inherent in the current notification system. Firstly, cases are reported by sex without any reference to the sexual orientation of patients. This distorts the male-to-female ratios in terms of diagnoses and contact tracing, and information about those at high risk is lost. Secondly, because the present practice is to notify cases and not patients the way in which patients contract more than one infection, either concurrently or in separate disease episodes, cannot be determined.

A survey of patients treated in STD clinics in England and Wales over a one-year period was, therefore, carried out. The methods and results of initial analyses have been reported[1] and showed that in 1978 there were approximately 100 000 fewer patients than cases. Women were more likely than heterosexual men to have several diagnoses concurrently, whereas multiple episodes of disease were more common in homosexual than in heterosexual men or in women.

In this paper differential patterns of diagnosis between heterosexual and homosexual men are examined and the infections which are most frequently diagnosed concurrently described. The impact of multiple disease episodes on the numbers of cases returned in the various diagnostic categories is considered. These analyses have been mainly confined to six common diagnoses: gonorrhoea, non-specific genital infection, trichomoniasis, candidosis, genital herpes, and genital warts. "Other conditions requiring treatment" and "other conditions not requiring treatment" are also included where relevant. Syphilis has not been included for two reasons. Although it is clinically the most serious of the STDs, it is numerically unimportant, comprising only 1% of all cases seen in clinics during 1978.[2] In addition, homosexually acquired syphilis

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TABLE I *Distribution of diagnostic categories in sample cases and all cases seen in STD clinics in England and Wales*

Diagnosis and DHSS coding category	*Men*		*Women*	
	Sample (%)	*All cases (%)*	*Sample (%)*	*All cases (%)*
Gonorrhoea (B1)	13·2	14·7	14·4	13·5
Non-specific genital infection (C4)	32·4	31·1	14·0	12·4
Trichomoniasis (C6)	0·9	0·7	11·8	11·5
Candidosis (C7)	4·4	3·2	19·5	19·4
Genital herpes (C10)	2·2	2·1	1·6	1·8
Genital warts (C11)	7·0	6·1	5·2	5·2
Other conditions requiring treatment (D2)	10·4	11·7	8·5	10·0
Other conditions not requiring treatment (D3)	24·4	24·7	21·3	22·9
Other	5·1	5·7	3·6	3·3
Total	100·0	100·0	100·0	100·0

has already been thoroughly surveyed by the British Co-operative Clinical Group, most recently in 1977.[3]

Results

The diagnostic categories of the notified cases in the sample are compared with the figures for all clinics in England and Wales for the year 1978 in table I. These confirm that the distribution of diagnoses in the sample cases is representative of that in all cases reported. Any discrepancies could be due to sampling error or to the different time periods concerned; the sample was drawn from cases seen between January and December 1978, while the published cases are those seen in the year ending June 1978.

Occasional omissions or errors in the diagnostic category used to return a case to the Department of Health and Social Security or the Welsh Office were found during the study.[1] The correct diagnosis was therefore recorded when appropriate, and the following results are based on the estimated true numbers of cases in each of the various diagnostic categories.

DIAGNOSIS RELATED TO SEXUAL ORIENTATION

Nine per cent of all male patients were homosexual. They contributed 10% of all male cases but a much higher proportion (15%) of gonococcal infections (table II). Homosexual patients also accounted for 12% of cases classified as "other conditions not requiring treatment". In contrast, trichomoniasis and candidosis were rarely acquired homosexually (2% and 4% of cases respectively).

As a consequence of these differences, the distribution of diagnoses also varied considerably between heterosexual and homosexual men. Among heterosexual patients non-specific urethritis was the most common diagnosis, accounting for one-third of all cases. In homosexuals, however, 31% of cases were classified as "other conditions not requiring treatment," and gonorrhoea was diagnosed in 19% of cases.

CONCURRENT DIAGNOSES

A disease episode is defined here as an initial visit to the clinic at which one or more positive diagnoses are made; for example, a new infection found when the patient returned for follow-up investigations a week

TABLE II *Diagnoses made in men by sexual orientation*

Diagnosis	*Cases contributed by homosexuals*		*Distribution of diagnoses in:*			
			Heterosexuals		*Homosexuals*	
	%	*SE*	*%*	*SE*	*%*	*SE*
Gonorrhoea	15·0	2·1	12·0	0·7	19·5	1·3
Non-specific genital infection	6·4	0·8	33·5	1·1	21·3	2·7
Trichomoniasis	1·9	1·8	1·0	0·1	0·2	0·2
Candidosis	4·2	1·3	4·9	0·6	1·9	0·6
Genital herpes	7·8	2·6	2·2	0·2	1·7	0·6
Genital warts	7·7	1·9	7·0	0·5	5·4	1·2
Other conditions requiring treatment	7·1	1·6	10·6	0·7	7·6	1·5
Other conditions not requiring treatment	12·3	1·1	24·2	1·0	30·8	1·9
Other	21·6	2·3	4·6	0·4	11·6	1·3
All diagnoses	9·8	0·9	100·0	0·0	100·0	0·0

SE = Standard error

TABLE III *Cases of six common diagnoses with which one or more other positive diagnoses were made concurrently*

	Heterosexual men		*Homosexual men*		*Women*	
Diagnosis	*%*	*SE*	*%*	*SE*	*%*	*SE*
Gonorrhoea	31·1	2·5	7·0	1·1	32·5	2·6
Non-specific genital infection	9·7	1·3	11·4	3·0	23·6	2·9
Trichomoniasis	44·0	7·3	*	*	35·8	2·2
Candidosis	18·8	2·6	20·1	16·7	30·9	2·1
Genital herpes	15·8	3·4	19·4	12·0	33·2	4·2
Genital warts	18·3	1·8	26·3	5·9	38·8	2·8

* Too few cases for analysis
SE = Standard error

or two later would be counted as a separate disease episode. In both heterosexual and homosexual men 6% of all disease episodes included more than one positive diagnosis compared with 16% of disease episodes in female patients. No more than two concurrent infections were ever found in a homosexual patient. Heterosexual men had three diseases in only 4% of episodes involving multiple infections, but female patients had three or four diseases in 11% of such episodes.

The proportions of six common diagnoses with which one or more additional infections were found concurrently are shown in table III. In heterosexual men nearly 20% of cases of candidosis and genital warts were accompanied by another diagnosis, as were 13% of gonococcal infections and 44% of trichomonal infections, although these were few in number. A diagnosis returned under the heading "non-specific genital infection" was made on the same day as 9% of cases of gonorrhoea. The pattern of concurrent disease differed between heterosexual and homosexual men. In the latter group, over one-quarter of cases of genital warts but only 7% of gonococcal infections were accompanied by another disease.

Among women, one or more additional diseases were found concurrently in 39% of cases of genital warts, 36% of trichomonal infections, and approximately one-third of cases of gonorrhoea, candidosis, and genital herpes (table III). Trichomoniasis was diagnosed most often with gonorrhoea (16%) in women, followed by candidosis (10%), and diagnoses returned under the heading "non-specific genital infection" (4%) (table IV). Similarly, 19% of trichomonal infections were accompanied by gonorrhoea, 9% by candidosis, and 4% by non-specific genital infection or genital warts. Non-specific genital infection, gonorrhoea, trichomoniasis, and genital warts were diagnosed concurrently with candidosis in roughly equal proportions of cases (6-9%). Nearly one-quarter of cases of genital warts were accompanied by candidosis and 8% by trichomoniasis.

DIAGNOSES IN RELATION TO MULTIPLE DISEASE EPISODES

As already reported,[1] 10% of heterosexual men had more than one disease episode, but these patients accounted for 27% of all positive diagnoses in heterosexuals—that is, all diagnoses which were not returned under the heading "other conditions not requiring treatment" (table V). If the distribution of diagnoses among them were the same as that among patients who had only one disease episode, then the proportion of cases in each diagnostic category contributed by these patients would also be 27%.

TABLE IV *Diagnoses made concurrently with gonorrhoea, trichomoniasis, candidosis, and genital warts in women*

	Gonorrhoea		*Trichomoniasis*		*Candidosis*		*Genital warts*	
Diagnosis	*%*	*SE*	*%*	*SE*	*%*	*SE*	*%*	*SE*
Gonorrhoea			19·4	2·1	7·1	1·0	5·8	1·4
Non-specific genital infection	4·2	1·7	4·5	1·4	9·2	1·7	5·5	1·4
Trichomoniasis	16·3	1·4			5·6	0·9	8·3	1·7
Candidosis	10·1	1·7	9·4	1·5			22·5	2·8
Genital herpes	0·8	0·4	1·4	0·6	1·0	0·3	0·5	0·5
Genital warts	2·2	0·5	3·7	0·7	6·1	0·9		
Other conditions requiring treatment	1·4	0·5	2·0	0·4	3·1	0·6	3·4	1·4
Other	3·1	0·8	1·9	0·8	3·2	0·7	3·9	1·2
All diagnoses	32·5	2·6	35·8	2·2	30·9	2·1	38·8	2·8

SE = Standard error

TABLE V *Cases of seven common diagnoses contributed by patients with multiple disease episodes*

	Heterosexual men		*Homosexual men*		*Women*	
Diagnosis	*%*	*SE*	*%*	*SE*	*%*	*SE*
Gonorrhoea	34·0	2·4	45·7	6·6	31·4	3·1
Non-specific genital infection	27·6	1·8	41·7	6·0	26·6	2·8
Trichomoniasis	31·7	6·3	*	*	34·4	3·0
Candidosis	21·8	2·5	36·4	14·7	28·5	2·1
Genital herpes	21·5	3·9	29·5	14·5	31·1	4·8
Genital warts	24·3	3·7	50·0	18·3	26·9	3·3
Other conditions requiring treatment	22·3	3·1	29·2	5·7	27·3	2·9
All positive diagnoses	26·6	1·6	40·0	6·0	28·8	1·6

* Too few cases for analysis
SE = Standard error

The fact that the proportions vary shows that these patients were more, or less, likely to have certain infections at each visit than patients with a single disease episode. Heterosexual men who had several episodes of disease contributed a disproportionate amount of gonococcal and trichomonal infections (34% and 32% respectively) but relatively few cases of candidosis (22%), genital herpes (22%), or genital warts (24%).

Among homosexuals, 15% had more than one disease episode but contributed 40% of all positive diagnoses in this group. Patients with multiple episodes of disease accounted for a high proportion of cases of gonorrhoea (46%) and genital warts (50%) but, like the heterosexuals, were less likely to have candidosis or genital herpes than patients with only one disease episode.

Twelve per cent of female patients had several episodes of disease and accounted for 29% of all positive diagnoses. Unlike the men, however, there were few differences in diagnostic patterns between women with single or multiple disease episodes. The latter group contributed only slightly too high a proportion of cases of gonorrhoea (31%), trichomoniasis (34%), and genital herpes (31%) and slightly too low a proportion of cases of non-specific genital infection (27%) and genital warts (27%).

Discussion

Fifteen per cent of gonococcal infections in men were found to be homosexually acquired compared with only 10% of all cases. The British Co-operative Clinical Group recently reported that homosexuals accounted for 11% of gonococcal infections seen in clinics in England and Wales in 1977.[3] This figure is certain to be too low, however, since data were unavailable for two major clinics in London, where the homosexual-to-heterosexual ratio among male patients is considerably higher than in the rest of the country.[1]

Other studies in single clinics have shown that homosexuals contribute a relatively high proportion of cases of gonorrhoea, ranging from 9%—compared with only 4% of all cases—to 29%, compared with only 16% of all cases.[4-6] There are several plausible explanations for this finding. It is possible that the rates of transmission of infection between active and passive homosexuals are higher than those between heterosexual men and women. The prevalence rate, and thus the risk of exposure to gonorrhoea, may be higher in the homosexual population than among heterosexuals of both sexes. Perhaps homosexual contacts of patients with gonorrhoea are traced more actively than heterosexual contacts. This study has also shown that homosexuals attend clinics for a check-up more often than heterosexuals. Asymptomatic gonorrhoea may thus be more likely to be diagnosed coincidentally in homosexual patients but to remain undetected in heterosexuals. No evidence exists to support or refute any of these theories. The most likely explanation is that homosexuals seen in clinics account for too high a proportion of gonococcal infections only because they are exposed to other sexually transmitted diseases relatively infrequently. In contrast, heterosexuals can, and do, contract the diseases which are more prevalent among their female partners, such as candidosis, trichomoniasis, and genital herpes.

Nine per cent of heterosexual men with gonococcal urethritis had an additional infection—notified as non-specific urethritis (NSU)—diagnosed at the same time. Since it is not possible to establish a separate diagnosis of NSU in the presence of *Neisseria gonorrhoeae,* these associated infections must virtually all have been due to *Chlamydia trachomatis.* Since the SBH60 form does not have a separate category for chlamydial urethritis, however, such infections would have to be notified as NSU. Many clinics lack the facilities to culture *C trachomatis,* and it is there-

fore likely that its true incidence in men with gonorrhoea is closer to 20-30% as reported elsewhere.[7 8]

It has already been suggested[1] that the high incidence of concurrent infections in women may be partly explained by the frequency of asymptomatic disease. A woman with asymptomatic gonorrhoea, for example, will be unlikely to attend an STD clinic until she acquires a second, symptomatic, infection, unless in the meantime she receives a contact slip or complications develop. Previous reports,[9-13] all from clinics in London, have indicated that between 22% and 42% of gonococcal infections in women are accompanied by trichomoniasis, while candidosis is found in approximately 40% of cases. In a study of patients with genital warts Oriel[14] found that 20% of women also had gonorrhoea, 16% had trichomoniasis, and 18% had candidosis. This national study has resulted in generally lower figures, perhaps because of regional variations in sexual behaviour or prevalence rates and thus the risk of exposure to the different STDs. Alternatively, variation in the accessibility and quality of laboratory services could lead to differences in the rates of diagnosis between areas.

It is widely accepted that some STDs have a particularly high relapse or recurrence rate—for example, NSU in male heterosexuals, candidosis in women, and genital herpes in both sexes.[15-17] Genuine relapses, as opposed to reinfections, may reasonably be expected to occur frequently in patients with these diseases; the cure rates for NSU and candidosis are lower than for gonorrhoea, and there is no effective treatment for herpes currently available. The data presented above, however, appear to show that the recurrence rates for NSU, candidosis, and herpes are no higher than for any other STD. Cases of these infections contributed by patients with more than one disease episode are almost exactly as would be expected, given the proportion of all cases explained by such patients. This finding does not necessarily belie long-held beliefs; rather, it may simply mean that patients with recurrent disease attend several clinics in the hope of finding a permanent cure or that they give up seeking medical care altogether. Reporting practices vary between clinics; in some, physicians may notify only the original case and omit to report recurrences occurring within a short period. In contrast, disproportionate numbers of cases of gonorrhoea were contributed by male and female patients with multiple disease episodes. This finding indicates not only that gonorrhoea is probably more prevalent among those members of the population who change partners frequently but that the differences in prevalence rates between this group and people who change partners less often is greater for gonorrhoea than for other STDs. This may be due to the asymptomatic nature of the disease or perhaps to a relatively high transmission rate per sexual exposure.

This report has shown that a simple count of cases treated is an inadequate measure of the problems posed by STDs. Two useful additions could be made to the reporting requirements. Firstly, male cases should be classified according to the sexual orientation of patients. Secondly, an indication of whether the patient is genuinely a "new" attender at the clinic or has been seen previously should be given for all cases. The resulting statistics would permit more rapid identification of the diseases which are the most difficult to control.

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